



Forest Insect & Disease Management

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BIOLOGICAL EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS
IN THE PROPOSED PERSIMMON MOUNTAIN WILDERNESS AREA
(ANDREW PICKENS RANGER DISTRICT OF THE SUMTER NATIONAL FOREST)^{1/}

S.C.

By

William H. Hoffard, William A. Carothers and E. T. Wilson

ABSTRACT

An aerial photographic survey and ground evaluation of southern pine beetle, (Dendroctonus frontalis Zimm.) infestations in and near the proposed Persimmon Mountain Wilderness Area of the Sumter National Forest showed that beetles have killed over 82 acres, containing almost 4000 trees in 26 spots. Healthy brood beetles and a large number of freshly attacked trees indicate that high levels of damage are likely to continue. Forest Pest Management lists five alternatives on how these infestations can be managed.

TECHNICAL INFORMATION

In constructing galleries in the cambium of southern pines, southern pine beetles effectively girdle their host. Blue stain fungus, (Ceratocystis spp.) introduced by the beetles accelerates death by plugging the vascular systems of the trees. The galleries are lined with eggs which hatch soon after deposition. Larvae mine outward in the cambium ending their mines in pupal cells where they change to adults. These new "brood adults" emerge directly through the bark to continue the life cycle.

Under optimum conditions the life cycle can be completed in less than one month with as many as seven generations produced annually.

^{1/} This survey and report were prepared jointly by the FPM Aerial Survey Team in Doraville, Georgia and the FPM Field Office at Asheville, North Carolina.

INTRODUCTION AND METHODS

In response to a request by the Supervisor of the Francis Marion-Sumter National Forests, Forest Pest Management conducted a biological evaluation to determine the status and trend of southern pine beetle infestations in the proposed Persimmon Mountain Wilderness Area of the Andrew Pickens Ranger District (Fig. 1).

During the weeks of July 6th and 13th, Forest Pest Management's Aerial Survey Team photographed areas of dead and dying pines at a scale of 1:6000. One hundred fifty-five color infrared photos were examined and pine mortality was calculated by acreage and number of trees.

Upon completion of the photo interpretation, five southern pine beetle spots within and adjacent to the proposed wilderness area were ground checked to gain the following information:

1. Condition of brood beetles.
2. Numbers of currently infested red trees and currently infested green trees (for correction of aerial survey data).
3. Basal area (to measure stand stress).

RESULTS

Severity of the infestation is shown in Table 1. Twenty-six areas of beetle-killed timber within and near the proposed wilderness area were recorded on the photographic survey (Fig. 2). Much of this acreage contained old, vacated trees, but photographic and ground data showed that a substantial amount (almost half) contained recently vacated and currently infested trees. Almost 4,000 trees on 82 acres have been killed in or immediately adjacent to the proposed wilderness area. Ground checks showed a very high red infested to green infested ratio of 1:2.75 with over 30% of all killed trees infested at ground check time. Average total basal area was 100.

Brood beetles usually appeared very healthy with very intense attacks in all tree species examined (shortleaf, Virginia and white).

CONCLUSION AND RECOMMENDATIONS

Although there are a number of inactive spots, the data indicate a healthy southern pine beetle population dispersed over a wide area of moderately stressed trees. Preliminary estimates based on historical data indicate that as many as 40 additional acres including 2200 trees could be lost this calendar year.

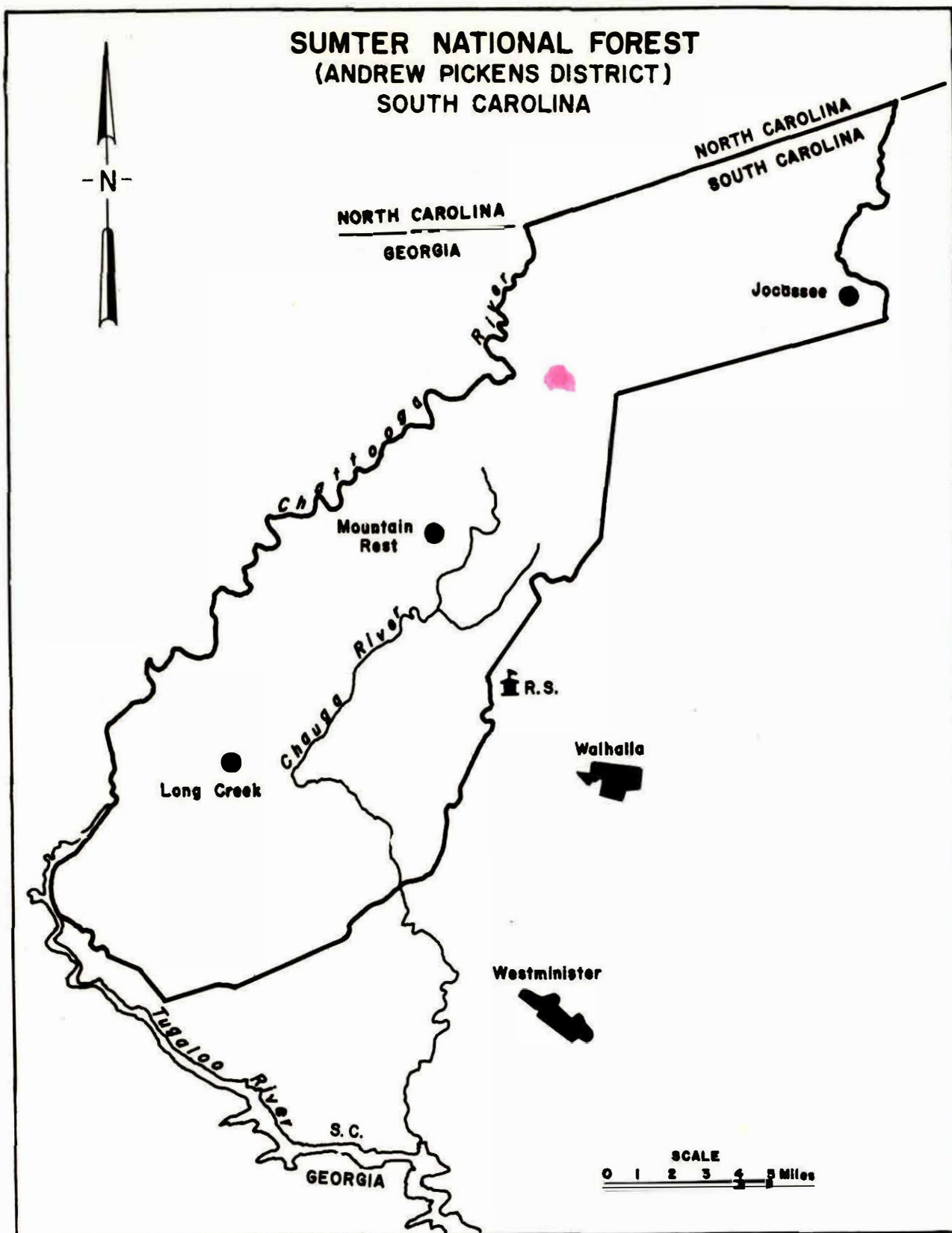


Figure 1.--Approximate location of SPB activity within proposed Persimmon Mountain Wilderness Area.

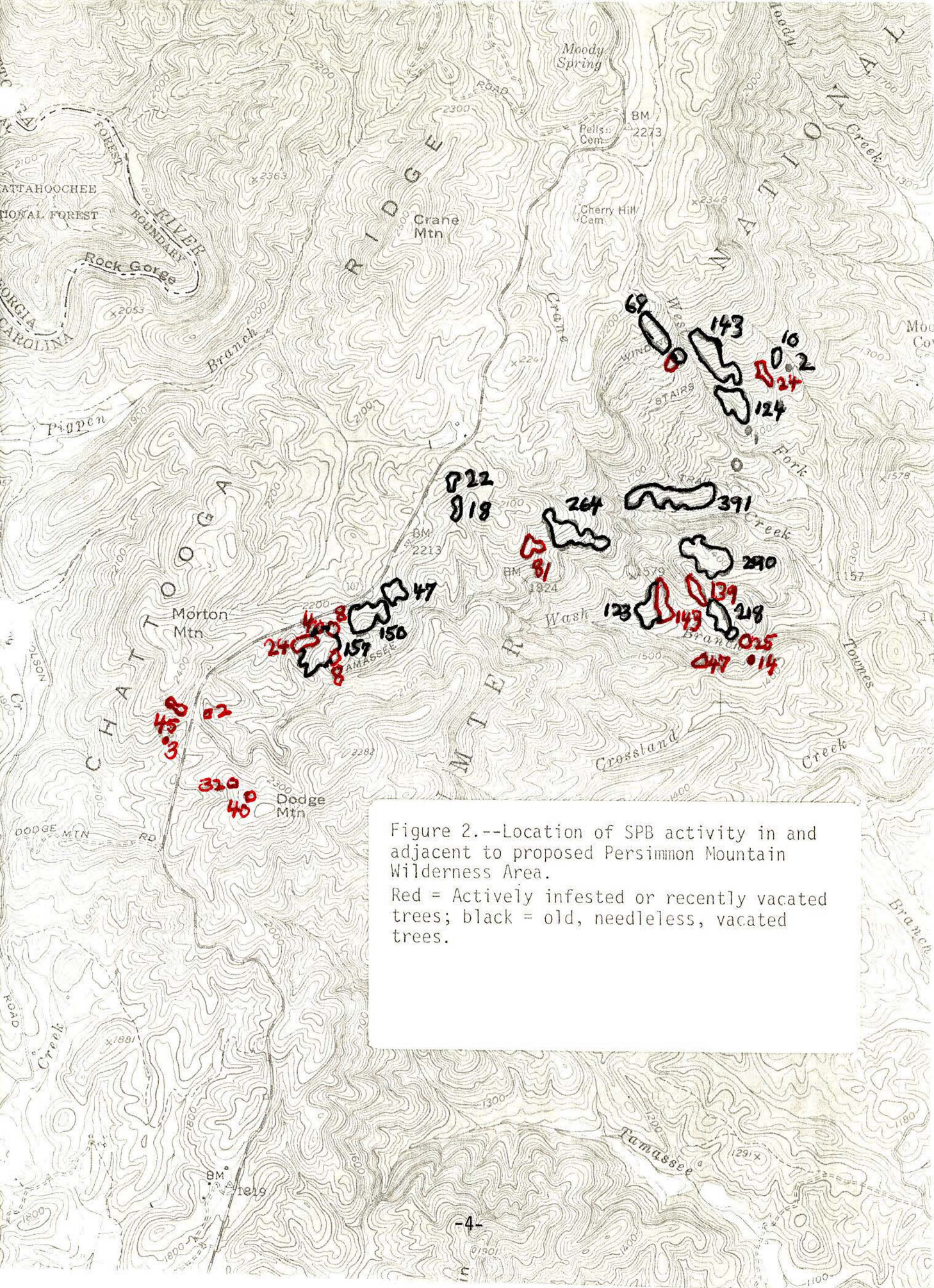


Table 1.--Severity of southern pine beetle kills within and adjacent to the proposed Persimmon Mountain Wilderness Area.

	Old Vacated <u>2/</u> Timber	Newly Vacated <u>3/</u> Timber	Total Vacated Timber	Red Infested Timber	Green Infested Timber	Total Infested Timber	Total Killed Timber
Trees	2083	493	2576	371	1020	1391	3967
Acres	43.6	10.1	53.7	7.6	21.0	28.6	82.3

2/ As much as 1 year old without needles.

3/ Recently killed.

There are five alternatives which may be considered in dealing with active infestations within the proposed wilderness area:

Alternative 1 -- Do nothing and allow the infestation to continue its course.

Because of the cyclic nature of southern pine beetle outbreaks, they normally decline after several years. In the interim, substantial mortality will probably occur over a wide area. This cyclic process would continue until natural succession to a hardwood-type forest is eventually realized.

Alternative 2 -- Remove all usable trees through salvage.^{4/}

This is the most common and effective control technique, but it would require road building resulting in disturbance to the area.

Alternative 3 -- Pesticide application.

Pesticides are a viable and effective alternative, but would require the approval of the Assistant Secretary for Natural Resources and Environment (FSM 2150).

Alternative 4 -- Removal of only infested and buffer trees.

Similar to Alternative 2, this method differs only in that noninfested salvageable trees are permitted to remain standing.

Alternative 5 -- Cut and leave.

This method, practical only in warmer months and proven only in Texas, consists of felling and leaving infested trees, thereby disrupting spot growth.

Regardless of whether or not spots within the proposed wilderness area are controlled, control should be carried out on accessible spots outside of the proposed wilderness area. If District personnel desire them, the aerial photos are available from the Doraville Field Office for use in any further evaluation or control plans.

^{4/} Details on Alternatives 2 through 5 are available from the 1979 Sumter National Forest SPB Evaluation or from the Asheville Field Office.